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VERMIFUGE COMPOSITION AND MANUFACTURING PROCESS FOR PILLS CONTAINING THIS COMPOSITION

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The present invention concerns a vermifuge composition intended for ruminants.

The invention also applies to the procedure for the manufacture of veterinary products such as pills, compressed tablets, or molded tablets containing this composition.

It is known that the pathogenic agents of gastrointestinal parasitism generally reach the livestock through the fodder and drinking water which it absorbs, which creates consecutive economic losses with delays in growth, decline in production of milk (or of fleece in the cases of sheep) and in problems with reproduction. Thus, in an investigation carried out on livestock in France, it was recognized that damage of strictly parasitic origin is estimated at approximately 1.6 billion francs for a single year, 1960.

Depending on the climate, the season often sets a signal for implementing preventive measures against infestation of pasture grass in springtime and autumn. In zones with a humid tropical climate, grass and water are infested for the entire year and this infestation is at a maximum notably during the rainy season.

In practice, the preventive measures against the infestation of pasture grass are essentially agropastoral. These measures consist notably of draining and of harrowing the pastures, and of sterilizing the grass by spreading chemical substances such as copper and iron sulfate, calcium cyanamide, methyl bromide, cadmium salts, etc.

Sometimes, these measures are known to be very expensive and insufficient for those measures for controlling only the development of parasites.

Moreover, several anthelmintic products are known to be used as preventive agents of gastrointestinal parasitism in ruminants. In general, these products are presented in aqueous suspension.

However, creating the suspension and the administration of these products require a relatively long time, so that to treat large herds, the labor costs are more expensive than the product required for removal of the parasite.

The goal of the present invention is to remedy the above-mentioned drawbacks by putting at the disposal of the stockbreeder a product containing an anthelmintic composition, not only effective but useful, as practical as it is economical, making possible the establishment and achievement of preventive programs on important livestock.

According to the invention, the vermifuge composition, notably for ruminants, is characterized by the combination of an anthelmintic product, of a binder, and of a dispersion agent within the rumen of the animals, this dispersion agent being of plant origin.

Moreover, according to a preferred version of the invention, the vermifuge composition contains antistress material of organic and/or inorganic origin chosen from among vitamins A and D and mineral compounds.

Preferably, the anthelmintic product contained in the composition according to the invention includes at least one compound chosen from among haloxon, thiabendazole, as well as the anthelmintics presented in the form of fine particles and able to be absorbed per os.

According to an advantageous version of the invention, the binder is composed of saturated fatty acids and/or saturated

fatty esters and/or unsaturated fatty acids containing 8 to 20 carbon atoms per molecule.

This fatty body acts as a protectant for the anthelmintic which is thus preserved from atmospheric agents and also enables the shaping of the composition as pills, compressed tablets, or molded tablets.

In order to reinforce the stability of the final composition, while enabling sufficient dispersion of this composition in the juice of the rumen, the dispersion agent of plant origin is preferably composed of sawdust and/or bagasse.

To ensure a good appetency of the composition, it is advantageous, moreover to include in it some appetitive agents such as saccharins and sucrose.

Preferably, the composition according to the invention contains the following compounds, within the concentration limits indicated hereafter:

Table I:

Haloxon and/or thiabendazole	3 to 35%
Palmitin and/or stearin	25 to 35%
Unsaturated fatty acids	15 to 20%
Saccharins and/or sucrose	3 to 6%
Sawdust and/or bagasse	Remainder to 100%

In practice, first a composition based on binder, from material of plant origin and, optionally, appetitive material is obtained and only before treatment of the animal is the anthelmintic product(s) introduced in desired and variable

proportions, notably according to the weight of the animal that is to be treated.

To avoid stress on the animals, vitamins A and D_2 will be added to the composition, as well as mineral compounds.

The preferential proportions for 100 g of composition are between 10,000 and 100,000 IU for vitamin A and between 1000 and 20,000 IU for vitamin D_2.

The concentration of the mineral compounds is advantageously between 0.6 and 1.5%.

Given hereafter is a nonlimiting formulation example of mineral compounds:

Table II:

Magnesium sulfate	35%
Potassium iodide	2%
Zinc sulfate	1%
Iron citrate	15%
Copper sulfate	1%
Sodium molybdate	1%
Cobalt sulfate	1%
Dicalcium phosphate (fluorine free)	40%
Manganese sulfate	4%

In order to facilitate its administration to the animal, the composition according to the invention is preferentially presented in pills, in compressed tablets, or molded tablets of varying weight between 20 and 60 g according to the nature and weight of the animal.

These pills, compressed tablets, or molded tablets contain preferably, 4 to 6 g of haloxon, and 10 to 12 g of thiabendazole for 100 kg of live weight of the animal.

According to the invention also, the manufacturing process of a veterinary product such as a pill, a compressed tablet, or a molded tablet containing a vermifuge composition of the preceding type is characterized in that the binder and dispersion agent of plant origin are mixed, in that the mixture so formed is heated until the binder melts, in that the anthelmintic product is added, and in that the obtained paste is molded in the form of a pill, a compressed tablet, or a molded tablet.

According to a preferred version of the procedure according to the invention, an antistress material containing vitamins A and D_2 and mineral compounds is also added to the melted mixture.

According to another preferred version of the procedure, appetitive material such as saccharins and/or sucrose is also added to the melted mixture.

For information only, given below are nonlimiting examples of pills of 30 g, especially intended for treatment of sheep weighing about 20 kg.

Example 1

8 g of stearin, 6 g of oleic acid, and 15 g of finely divided sawdust, previously sterilized at 120°C, are mixed and heated until melted, and 1 g of haloxon is added in powder form.

The melted mixture is stirred by a mixer and thus a compressible paste is obtained that is molded in the form of a pill.

The pill thus obtained is cooled down in a temperature-controlled room at a temperature between -4°C and +4°C and can then be stored at room temperature.

Example 2

The following mixture is heated to melting:
-8 g palmitin
-6 g oleic acid
-13 g bagasse.

To the melted mixture are added:
-2 g thiabendazole and
-1 g saccharins, in powder form.

The paste is mixed and molded in the form of a pill and the latter cooled down as in Example 1.

Example 3

The following mixture is heated to melting:
-8 g stearin
-6 g oleic acid
-7 g sawdust.

The compounds below are added to the melted mixture:
-1 g haloxon
-1 g saccharins
-20,000 IU of vitamin A and 2500 IU of vitamin D_2 stabilized on 7 g of sawdust and

-0.2 g of mineral compounds as indicated in Table II.

The obtained paste is mixed and molded in the form of a pill and is cooled down as in Example 1.

Example 4

The following mixture is heated to melting:

-8 g stearin

-6 g oleic acid

-6 g sawdust.

The compounds below are added to the melted mixture:

-2 g thiabendazole

-1 g saccharins

-20,000 IU of vitamin A and 2500 IU of vitamin D_2 stabilized on 7 g of sawdust and

-0.2 g of mineral compounds as indicated in Table II.

This mixture is mixed and the obtained paste is molded in the form of a pill, the latter is cooled down as in Example I.

The compositions presented as pills, compressed tablets, or molded tablets prepared according to the described procedure are stable and do not undergo any alteration over time. They are furthermore not very sensitive to climate variations and are particularly resistant to high temperatures and to the humidity in tropical regions.

In order to judge the effectiveness of the composition according to this invention, the results obtained on sheep of about 20 kg are indicated hereafter.

They concern sheep aged 6 to 8 months, divided into 5 batches of 28 units each.

The distribution of the batches were as follows:

- Batch I control, not undergoing any treatment
- Batch II receiving two treatments spaced two months apart, in the form of two pills of 30 g containing 5 g haloxon for 100 g of live weight of the animal, their composition in accordance with Example III
- Batch III receiving two treatments spaced two months apart, in the form of two pills of 30 g containing 10 g of thiabendazole for 100 kg of live weight of the animal, their composition in accordance with Example IV
- Batch IV receiving two treatments spaced two months apart, in the form of an aqueous suspension with 5 g of haloxon for 100 kg of live weight of the animal
- Batch V receiving two treatments spaced two months apart, in the form of an aqueous suspension with 10 g of thiabendazole for 100 kg of live weight of the animal.

The animals were weighed individually during the same hour before the first treatment and after the final treatment. The results obtained are recorded in the following table:

Table III:

(1) Lots	(2) Poids moyen initial (kg)	(3) Poids moyen final (kg)	(4) Gain moyen de poids (kg)	(5) Animaux accidentés (%)
I	20,2	24,6	4,4	-
II	18,2	29,0	10,8	0
III	21,8	31,5	9,7	0
IV	22,7	31,9	9,2	> 2
V	19,6	28,2	8,6	> 2

Key: 1 Batches
2 Initial average weight
3 Final average weight
4 Average gain in weight
5 Injured animals

[Translator's note: Commas in the table represent decimal points.]

As these results show, the animals belonging to Batches II and III treated with pills in accordance with the invention have had a weight increase slightly more rapid than those untreated animals or those treated according to the known procedure consisting of administering an aqueous anthelmintic suspension. This difference in weight increase can be explained by the activity of the antistress material, and by a better utilization of the active ingredient by the pathogenic agents, which is the result of a better distribution of the product in the digestive tract.

With the intention of fighting different parasites in a similar animal, the practice of this administration procedure enables the inclusion and supply of adequate, known vermifuges in combination.

Moreover, the treatment of animals by pills in accordance with the invention enables a large gain in time and labor.

A single person can in effect treat more than 1000 animals at a time, although several people are necessary to attain this performance when the vermifuge is presented in aqueous suspension.

In addition to administration of the pills, the compressed tablets or the molded tablets do not require any new manipulation or new material and can be applied right in the field.

Thus, with these numerous advantages, the invention represents the economic and practical solution for removing the parasite from the animals.

Claims

1. Vermifuge composition, notably for ruminants, characterized by the combination of an anthelmintic product, a binder, and a dispersion agent in the rumen of animals, this dispersion agent being of plant origin.

2. Vermifuge composition in accordance with Claim 1, characterized in that it consists in addition of antistress material, chosen among vitamins A and D and mineral compounds.

3. Vermifuge composition in accordance with one of Claims 1 or 2, characterized in that the anthelmintic product contains at least one compound chosen among haloxon, thiabendazole, and anthelmintics presented in the form of fine particles and being absorbed per os.

4. Vermifuge composition in accordance with one of Claims 1 to 3, characterized in that the binder is composed of at least one compound chosen among the fatty acids and/or esters and the unsaturated fatty acids containing 8 to 20 carbon atoms per molecule.

5. Vermifuge composition in accordance with one of Claims 1 to 4, characterized in that the dispersion agent is formed from sawdust and/or bagasse.

6. Vermifuge composition in accordance with one of Claims 1 to 5, characterized in that it comprises moreover, appetitive material containing saccharin and/or sucrose.

7. Vermifuge composition in accordance with one of Claims 1 to 6, characterized in that it contains the following products, approximately within the weight limits hereafter:

Haloxon and/or thiabendazole	3 to 35%
Palmitin and/or stearin	25 to 35%
Unsaturated fatty acids	15 to 20%
Saccharins [and/or sucrose]	3 to 6%
Sawdust and/or bagasse	Remainder to 100%.

8. Vermifuge composition in accordance with Claim 7, characterized in that it contains in addition;

-10,000 to 100,000 IU of vitamin A

-1000 to 20,000 IU of vitamin D_2

for 100 g of composition

and 0.6 to 1.5 wt% of mineral compounds.

9. Manufacturing process for a veterinary product such as a pill, a compressed tablet, or a molded tablet, containing a vermifuge composition in accordance with one of Claims 1 to 8, characterized in that the binder and the dispersion agent of plant origin are mixed, the mixture so formed is heated to melting of the binder, in that the anthelmintic product is added and in that the paste so formed is molded into a desired form, such as a pill, compressed tablet, or molded tablet.

10. Manufacturing process in accordance with Claim 9, characterized in that the antistress material containing vitamins A and D and mineral compounds is added to the melted mixture.

11. Manufacturing process in accordance with Claim 10, characterized in that the appetitive material containing saccharin and/or sucrose is also added to the melted mixture.